cylinders for the usual knives was also tried, and every care taken to prevent the inclusion of dust, but the results were very unsatisfactory.

The results obtained are as follows:—

Length of second's pendulum reduced to sea-level at the equator.

	Metre.
Alleghany Observatory	0·99909384
Ebensburg	0·9910672
York	0·991015

At Alleghany, the effect of a valley was not taken into account, as there was no topographical survey available; the necessary correction will slightly increase the above value.

LETTERS TO THE EDITOR

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.*

[*The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to insure the appearance even of communications containing interesting and novel facts.*]

The Presence of the Remains of Dicynodon in the Triassic Sandstone of Elgin

In my address to the Geological Section of the British Association I was fortunately able to announce a discovery which is of the very greatest interest both to geologists and biologists. As this discovery was made only a few days before the commencement of the meeting at Aberdeen, and after the draft of the address was in type, it does not appear in your columns; I will therefore ask you to insert this note upon the subject. Visiting the "Cutties Hillock" quarry near Elgin early in September, I found that the workmen had recently obtained a new specimen of a reptile, in which the head was preserved. On examining this I found that there were clear indications of two large canine teeth in the upper jaw with permanent pulp cavities. These characters and the general form of the skull left scarcely the smallest doubt in my mind that the remains must belong to a reptile closely allied to *Dicynodon.* From the examination of a photograph which I submitted to him, my friend Dr. Traquair was able to fully confirm this conclusion, and to lay a preliminary note on the specimen before the Geological Section at Aberdeen. I hope that ere long he will be able to give a complete description of it.

As Dicynodonts have hitherto been only found in South Africa, in India, and in the Ural Mountains, this discovery is an exceedingly important one. Seeing that doubts have been expressed concerning the Triassic age of the South African deposits, the occurrence of the very characteristic African form in the Trias of Western Europe is an important link in the chain of evidence by which these beds have been correlated. It is interesting, too, to be able to point out that the sandstones of Elgin, concerning the age of which such a great amount of controversy has taken place, have now yielded reptiles belonging to no less than *four* orders—namely, the Lacertilia, the Crocodilia, the Dinosauria, and the Dicynodontia. J. W. Judd

An Earthquake Invention

While on a visit to the Melbourne Observatory I saw Nature of July 2 containing two letters from Prof. Piazzi Smyth, intended to expose a piratical attempt on the part of a "B.A. man" to adopt an idea of Mr. David Stevenson with regard to the construction of houses to withstand earthquake motion. The publication of the first of these letters is at the request of Mr. D. A. Stevenson. The piracy referred to by Prof. Smyth is a brief note in a paper written by myself. My name is at the head of it (see *Report* to the B.A. 1814). Prof. Smyth complains that I have not taken notice of a paper written some twenty years ago by Mr. D. Stevenson. I regret to say that I am not acquainted with that paper, and how Prof. Smyth expects that I should be when living 10,000 miles away from collections of European books, I fail to see. I am, however, acquainted with very much relating to aseismic or aseismatic tables, and if I made reference to the work of Mr. David Stevenson, I must necessarily have referred to the work of others. As every report which I have hitherto written for the British Association has been in the form of notes which have subsequently been expanded in special papers, an historical account of aseismic tables would have been out of place. Prof. Smyth is apparently only acquainted with the work of Mr. D. Stevenson. Under the head of aseismic tables I include ball and plate seismographs, the lamp tables in certain Japanese lighthouses, two model houses which I constructed in Japan, together with the model lighthouse spoken of by Prof. Smyth, and my own dwelling house. *All of these involve the same principles, and they only differ in their dimensions.*

(1) *Ball and Plate Seismographs.*—Of these seismographs I have constructed *several* types. At the time of an earthquake, in consequence of acquiring a surging movement, they fail to give reliable records. They have been *independently* invented and described as original by many. Mr. Briggs, of Launceston, Tasmania; Dr. Verbeck, of Tokio, Japan; Mr. T. Gray, of Glasgow; Mr. D. A. Stevenson, of Edinburgh, &c., have all been authors of such instruments.

Mr. D. A. Stevenson recently figured and described his form of seismograph in the pages of Nature. If we overlook certain mechanical defects in this instrument, as, for instance, attaching a recording index to the edge of the "steady plate" rather than at its centre of inertia, the resemblance of Mr. Stevenson's contrivance is strikingly like a seismograph the photographs and descriptions of which existed in several societies and libraries in Britain prior to the appearance of Mr. Stevenson's invention. After reading Mr. Stevenson's description I did not ask for the publication of an "interesting" and "well-put" letter, accusing Mr. Stevenson of having appropriated the ideas of others, but I furnished him with copies and references to papers in the *Transactions* of the Seismological Society and other periodicals where mention was made of this type of instrument.

(2) *Lamp Tables.*—As I have been an officer in the Public Works Department of Japan for the last ten years, where I have every facility of knowing what the performance of the lamp tables at the lighthouses has been at the time of severe earthquakes, I trust that some credence may be given to what I may say on this subject. When I last made inquiries about these tables, I found that they were all regarded as failures and one and all had been clamped. If Mr. Stevenson would like to have details respecting these failures I shall, on my return to Japan, have great pleasure in making them public.

Mr. Mallet, in his "Palmieri's Vesuvius," very distinctly states that he was consulted by Mr. Stevenson respecting the Japanese structures, and that the principles indicated by him (Mallet) were followed out in their construction.

As Mr. Mallet is dead, perhaps Mr. Stevenson or Prof. Smyth will kindly enlighten us as to the meaning of this passage. Although I have made seismology a speciality for some years, I must confess that I am as yet in the dark as to who was the first inventor of the aseismic joint. To me it appears that there have been many inventors.

(3) *Models.*—My first model was about as large as a good-sized dog kennel. For a *short*-period oscillatory movement the house resting on its rollers remained at rest. Prof. Smyth speaks of Mr. Stevenson having imitated earthquake motion by the blows of a sledge-hammer. Although Prof. Smyth regards the blows of a sledge-hammer as an admirable illustration of earthquake motion, any one acquainted with the true nature of earthquake motion would decline to recognise Mr. Stevenson's test as any test whatever.

(4) *Building.*—The only *building* placed on free foundations with which I am acquainted is the one I have erected in Tokio. At first it rested on balls, and, like Mr. Stevenson's lamp tables, it was for certain reasons a failure. Now it rests on spherical grains of cast-iron sand. It is now astatic, and I regard it as a success. At the time of an earthquake the motion outside the house is usually about six times what it is inside. A description of it will be found in the *Reports* of the British Association for 1885.

From what I have now said it will be clear that I have no desire to claim the authorship of the aseismatic joint. Detailed reference to the obscure and manifold authorship of what has hitherto proved a failure would certainly have been out of place in the report to which Prof. Smyth has referred.

Had Messrs. Stevenson and Smyth been acquainted with the nature of earthquake motion, a few of the more important facts in the history of the ball and plate joint, and the details of the

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failure of the tables in the Japanese light-houses, I feel sure that much of the objectionable innuendo to which I have been subjected would never have been penned. JOHN MILNE

s.s. *Waihora*, Hobart, Tasmania

P.S.—The above has been written whilst at sea, and I have neither had opportunity to refer to books or papers. On my return to Japan I shall be glad to continue the history of the ball and plate joints, should it be required.

Tremble-terre du 26 Septembre, 1885

UNE seule secousse a été constatée le 26 Septembre à 0h. 58m. du matin ; elle a été composée de 2 à 3 oscillations, de direction variable suivant les localités. Le centre de la secousse a été dans le milieu du Valais, où son intensité a été appréciée comme très-forte, mais où il n'y a cependant pas eu de dégâts matériels ; il faut lui attribuer le No. VI. de l'échelle qui évalue en dix degrés l'intensité des tremblements de terre.

La secousse s'est étendue vers le nord jusqu'à Schwenden et Zweisimmen dans le Simmenthal, à Château d'Oex, Aigle et Yvorne ; dans les Alpes vaudoises elle a été fort bien sentie dans les vallées de l'Avençon, de la Gryonne, de la Grande-eau, et de la Savine. Dans tout le reste du canton de Vaud le tremble-terre semble avoir passé inaperçu, tandis qu'il nous est signalé de deux localités fort distantes, Genève et Nidau ; il est cependant probable que la secousse de Nidau a précédé de quelques minutes la grande secousse du Valais ; d'après un observateur très précis la secousse de Nidau a eu lieu à 0h. 53m.

En même temps que le sol de la Suisse était ainsi ébranlé, les appareils très délicats de l'observatoire sismique de Rome, qui avaient été en repos les jours précédents, ont signalé des vibrations du sol vers 1 heure du matin ; et dans le même nuit un violent tremblement de terre ravageait la ville de Nicolosi près de Catane en Sicile. F.-A. FOREL

Morges, 8 Octobre

Larvæ of Cerura vinula

LAST year I was rearing up some larvæ of *Cerura vinula*, the Puss Moth, from the egg, and I determined, while I had the chance, to write a life-history of them.

On examining the egg closely I found a small hole in the apex of each, and I thought at the time that this was probably caused by ichneumons, and therefore I laid the eggs by in a small box that I might capture the ichneumons when they made their appearance. Great was my surprise, then, when I found that the young larvæ came out as usual.

I therefore determined to get some more eggs and to find out whether this hole in the apex was caused by the mandibles of the larva inside, but I found that the larva did not emerge by this hole, but by a fresh one made in the side of the egg. And I find that all Puss Moth eggs have this hole in the apex.

I am now hoping to get some eggs of moths belonging to the same family (*e.g.* *Cerura furcula* and *bifida*) to see if they also are perforated in this way. I should be much obliged if any one who has got any of these eggs would kindly let me know whether this is the case.

This hole reaches through the shell of the egg, but is covered, on the inside (of the egg) with a thin tissue, like that which is found in birds' eggs.

I have carefully examined several scientific books, but have been unable to find this fact mentioned ; therefore I should be much obliged if any one could throw a light on this mysterious fact.

I unfortunately have none of these eggs to forward as examples ; but, as they are pretty common in May and June on poplar trees, I have no doubt that such of your readers as are interested in the subject will be able to examine them for themselves. CYRIL B. HOLMAN HUNT

Draycott Lodge, Fulham, October 9

Pulsation in the Veins

I AM quite satisfied that the pulsatory movement in the veins, to which my former communication referred, is not in any way *abnormal*, as suggested by Mr. Williams (p. 466). In *all* cases, without exception—and they have been a good many—in which I have had opportunity for the observation, the minute *visible* evidence of the pulsatory action has been present, and I have invariably been able to count the pulse of the individuals, as in the experiment detailed in my former letter.

The mirror experiment was tried on my own hand. And a medical friend who applied the sphygmograph in the usual way informed me that my pulse was free from any abnormality.

It is to be borne in mind that the pulsatory indications with which my paper is concerned are exceedingly minute and would escape the perception of nine persons out of ten—requiring an eye educated to appreciate very minute differences of shade and colour. I do not think that the bristles or sealing-wax thread which a correspondent (p. 437) kindly suggests, or even the orthodox sphygmograph would have a chance of effectually exhibiting them. I say shade *and colour*: for when a vein free from turgidity, and not sensibly altering the smooth surface of the skin, is seen only by its blue track, a modification of the *tint* is perceptible (to an educated eye) ; and the blue varies in intensity with the pulsatory action, sufficiently for the success of the pulse-counting experiment. J. HIPPISLEY

Stoneaston Park, October 4

Stonehenge

IN NATURE, vol. xxxii. p. 436, R. Edmonds associates Stonehenge with the metonic cycle, and quotes from Diodorus Siculus, whom he says flourished about 44 B.C. Would not the latter part of the first century A.D. be more accurate? He gives in his extract from Diodorus Siculus a quotation from Hecatæus, whom he confuses with Hecatæus of Miletus, when it was Hecatæus of Abdera to whom Diodorus referred. Hecatæus of Miletus flourished about 500 B.C., and Hecatæus of Abdera about 300. Mr. Charles Elton, M.P., in his "Origins of English History," gives the very same extract, and says that "We cannot admit that the work of Hecatæus is on the subject of Ancient Britain," and estimates its value in the following extract from the works of an eminent Polish scholar (Lélewel, Pythéas, 45): "Hécatée a publié un fameux ouvrage dont le titre décèle une vieille idée poétique rajeunie sous sa plume. Elle devait s'allier aux nouvelles découvertes et y prendre une place éminente au détriment de la science et du bon sens. Hécatée, énumerant tous les êtres mystérieux de la géographie septentrionale, enrichit leur nomenclature d'une rivière Scythique récemment trouvée en Orient par le conquérant, qu'il a appelée Parapamisos ; et plus encore des promontoires et des îles Celtiques, qu'il a probablement puisées dans les rélations véridiques de Pythéas pour les entrelacer dans les plages superboréennes."

The quotation from Diodorus is from his second book, but the whole of this second book is dedicated solely to a description of Asia ; and it is not until the fifth book is reached that he describes the British Isles, and with a very considerable degree of accuracy. (See Fergusson's "Rude Stone Monuments," p. 8).

I do not think, either, that "Nine Maidens" is simply an abbreviation of "Nineteen Maidens," for, like "Nine Ladies" of Stanton Moor, in Derbyshire, it is a memorial circle.

Stone Henge, moreover, is much more probably a memorial circle, as its original name implies—"Stan Hengis"; and commemorates the massacre of Vortigern's chiefs by Hengist in 462 A.D. The Rollright circle probably commemorates the victory of Rollo over Eadward, circ. 913, whilst Avebury and Hakpen (520), Kit's Coty House (455), Long Meg and her Daughters (508–520), Stanton Drew (508–520), Arthur's Table, Arbor Lowe, Cumrew, Salkeld and Mayborough commemorate some of the victories of Arthur. That this is reasonable may be mentioned the facts that coins of Claudius Gothicus (270 A.D.), Constantine the Great, Constantine junior, and Valentinian have been found at one or other.

Milverton, Leamington SAND. S. STANLEY

The Forecasting of Barometric Variations

IN a paper published in the *Journal* of the Royal Meteorological Society, vol. x., p. 219, 1884, I pointed out that during a series of years the barometric variations in Western India had presented certain features which, had they been known at the beginning of 1876, and, indeed, at the beginning of 1872, would have made it possible to have calculated with a considerable degree of precision and reliability the general course of the barometric variations from 1872 up to 1883, in some cases three

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